



Windbreak Trickle Irrigation Water Needs Worksheet

Cooperator: _____ Contract Item Number: _____

Conservationist: _____ Date: _____

Site/Planning Information:

Climatic Condition: Mean Annual Precipitation – inches (select one)
 _____ < 10 _____ 10 – 14 _____ 14 – 19 _____ > 19

Soil: AWC Total to 60 Inches (select one)
 _____ < 3.75 _____ 3.75 – 7.5 _____ > 7.5

Design Level Needed: Level (select one)
 _____ 1 _____ 2 _____ 3 _____ 4

Plant Species: (from FOTG Section II)

Species	Water Use Consumptive Group (High, Medium, Low)	Species Root Width (ft.)	Row Length (ft.)
Row 1.			
Row 2.			
Row 3.			
Row 4.			
Row 5.			
Row 6.			

Step 1: Record the selected species and their water use factor from Table 1:

Species	Use Factor	Species	Use Factor
Row 1.		Row 4.	
Row 2.		Row 5.	
Row 3.		Row 6.	

Step 2: Record the species root width from Table 2, and the row length, to calculate the area to be wetted: The basic equation is:

(Species Root Width) x (Row Length) = Wetted Area
 e.g., 7 ft. x 1,000 ft. = 7,000 ft.²

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Species Root Width (ft.)	Row Length (ft.)	Wetted Area (ft. ²)	Species Root Width (ft.)	Row Length (ft.)	Wetted Area (ft. ²)
Row 1.			Row 4.		
Row 2.			Row 5.		
Row 3.			Row 6.		

Step 3: Determine the gallons per day needed per windbreak row. The basic equation is:
 $[(\text{Use Factor}) \times (\text{Wetted Area}) \times (\text{Climatic Area Factor})] / (\text{Efficiency \%}) / 100 = \text{gallons/day/row}$
 e.g., $(3 \times 7,000 \text{ ft.}^2 \times 1.27) / 0.90 / 100 = 296 \text{ gal./day/row}$

Efficiencies: Point Source on Ground = 90% Spray Emitter = 80%
 Point Source Suspended = 80% Bubbler = 85%

Row 1 () x () x () / () / 100 = _____ gal./day/row
 Row 2 () x () x () / () / 100 = _____ gal./day/row
 Row 3 () x () x () / () / 100 = _____ gal./day/row
 Row 4 () x () x () / () / 100 = _____ gal./day/row
 Row 5 () x () x () / () / 100 = _____ gal./day/row
 Row 6 () x () x () / () / 100 = _____ gal./day/row

Total = _____ gal./day

Step 4: Determine the number of plants per row.
 The with-in row spacing between tree/shrub is found in Table 2.
 The basic equation is:
 $(\text{Row Length}) / (\text{With-in Row Spacing Between Tree/Shrub}) = \text{Number Plants/Row}$
 e.g., $(1,000 \text{ (ft.)/row}) / (6 \text{ (ft.)/plant}) = 167 \text{ plants/row}$

Row 1 () / () = _____ plants/row
 Row 2 () / () = _____ plants/row
 Row 3 () / () = _____ plants/row
 Row 4 () / () = _____ plants/row
 Row 5 () / () = _____ plants/row
 Row 6 () / () = _____ plants/row

Step 5: Determine the gallons per day needed per plant. The basic equation is:
 $(\text{Gal./Day/Row}) / (\text{Plants/Row}) = \text{Number Gal./Day/Plant}$
 e.g., $(296 \text{ gal./day/row}) / (167 \text{ plants/row}) = 1.8 \text{ gal./day/plant}$

Row 1 () / () = _____ gal./day/plant
 Row 2 () / () = _____ gal./day/plant
 Row 3 () / () = _____ gal./day/plant
 Row 4 () / () = _____ gal./day/plant
 Row 5 () / () = _____ gal./day/plant
 Row 6 () / () = _____ gal./day/plant

Step 6: The system will be (check one): Permanent _____ Temporary _____

Step 7: The system will need to be designed and balanced to provide the necessary amounts of water above by a person with appropriate engineering authority or by a certified irrigation dealer. Provisions for water management, lines, emitters, etc., for the early years of the windbreak must be part of the design and water management scheme.